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Feasibility, image quality and radiation dose of Coronary CT Angiography (CCTA) in obese patients using a new generation 256 Multi-Detector CT (MDCT)

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Introduction To evaluate feasibility, image quality and radiation dose of CCTA in obese patients using new generation 256-MDCT.

Methods and materials Thirty consecutive obese patients (Body Mass Index (BMI)>30) undergoing CCTA on a 256-MDCT (Revolution CT, General Electric) were retrospectively included. Prevalence and impact on diagnosis of motion and step artifacts were independently evaluated by two experienced readers using a 3-point scale (0: no artifact; 1: artifacts without interference on diagnosis; 2: artifacts interfere with diagnosis) and percentage of assessable coronary segments was calculated. Contrast-to-noise ratio (CNR) and signal-to-noise ratio (SNR) were measured for quantitative assessment. Radiation dose was evaluated by calculating the mean effective dose (ED).

Results Mean BMI was 36.0±5.9kg/m^2 with a mean HR of 91.4.0±48.9 bpm. Mean injected contrast volume (Iohexol 350) was 73.0±11.2mL. On a per-patient analysis, all the coronary segments were assessable in 29 (97%) patients. Only 2 coronary segments were not assessable in 1 patient due to motion artefacts resulted in a coronary segments assessability of 99.6% (455/457 segments) in the overall population. No step artifact was observed whereas motion artefacts (3-point scale score of 0.27±0.9) were infrequent and do not interfere with diagnosis. The mean CNR and mean SNR were respectively 10.0±2.6 and 11.1±2.0. ED remains low with an average of 2.71±1.6 mSv.

Conclusion CCTA is feasible in obese patients using a new generation 256-MDCT providing good image quality and low radiation dose in this challenging population.

The author hereby declares no conflict of interest

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Comparison of Coronary CT Angiography (CCTA) for patients with high heart rates using a new generation 256 Multi-Detector CT (MDCT) and a 64-MDCT: image quality and radiation dose

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Purpose To evaluate the benefits regarding image quality and radiation dose of new generation 256 Multi-Detector CT (MDCT) for CCTA in patients with a high heart rate (HR).

Methods Hundred consecutive patients with a HR >65bpm were retrospectively included (50 patients on a 64-MDCT, group A, 73.9±7.5 bpm; 50 patients on a 256-MDCT, group B, 85.8±30.0bpm). Prevalence and impact on diagnosis of motion and step artifacts were evaluated by two experienced readers using a 3-point scale (0: no artifact; 1: artifacts without interference on diagnosis; 2: artifacts interfere with diagnosis) and percentage of assessable coronary segments was calculated. Contrast-to-noise ratio (CNR) and signal-to-noise ratio (SNR) were measured for quantitative assessment. Radiation dose was evaluated by calculating the mean effective dose (ED).

Results In group B, motion artefacts were significantly reduced (0.58±0.64 vs 1.37±0.72, p<0.001) and no step artifact was observed (vs. 0.98±0.79, p<0.001). That resulted in a significant improvement in coronary segments assessability in group B (98.6% vs 80.9%, p<0.001). Both mean CNR and mean SNR were increased by 20% (p<0.001) in group B and ED was reduced by 82% (14.9±4.9 vs. 2.7±1.9 mSv p<0.001).

Conclusion New generation 256-MDCT allows performing pure arterial CCTA on high heart rate patients with improved image quality and coronary segments assessability, and reduced radiation dose.

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Plasma aldosterone levels on admission are associated with mental status and mortality in eldrely patients admitted for ACS

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Purpose To assess the association between plasma levels of aldosterone on admission for acute coronary syndrome, mental status and outcome in elderly (≥75) patients.

Methods After exclusion of patients with unstable conditions, neurological disorders or language deficiency, we assessed MSA defined by an abnormal confusion assessment test or Mini Mental Status Evaluation (MMSE<27) in 138 consecutive patients ≥75 years old. Plasma aldosterone levels were measured on samples drawn on admission. 3-month follow-up was completed in all patients.

Results MSA identified in 78(58%) patients. Medical and interventional management was similar between patients with and without MSA. At 3 months follow-up 14 (10.5%) patients were reported dead (15.4% with MSA 3.6% without MSA). MSA was also associated with high aldosterone levels (p=0.009). On univariate Cox analysis mortality was associated with higher levels of plasma aldosterone (p=0.002), MSA (p=0.03),mmSE (0.004) and GRACE score (p=0.02) but not age, neither gender. On multivariate analysis, aldosterone levels (adjHR 1.8[1.05;2.99] per log-aldosterone) andmmSE (adjHR 0.85[0.75;0.98] per point) but not GRACE score were predictive of mortality.

Conclusions MSA is detected in a majority of patients ≥75 years old presenting with ACS using simple clinical tests. Despite similar management short term mortality is higher in such patients. Aldosterone levels on admission are predictive of both MSA and mortality, but the association between MSA and mortality seems independent of aldosterone levels. Our results support further studies to assess the impact of aldosterone antagonists in the setting of ACS in elderly to improve both mortality and MSA.

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Trends in myocardial infarction hospitalizations and mortality rates in France, 2000-2013

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Aims The objective was to describe the epidemiology of myocardial infarction (MI) in France since 2000.

Methods Patients hospitalized with a principal discharge diagnosis of MI and death certificates mentioning MI as underlying cause of death were selected from 2002 to 2013 and from 2000 to 2011 respectively. Time trends were described by sex and age-group.

Results In 2013, 61 611 patients (42 159 men and 19 452 women) were hospitalized for MI. Between 2002 and 2013, a significant decline in rates of women hospitalized for MI was observed among ≥65ys (-31.8%), contrasting with a substantial increase among women <65ys (+25.7%). In men, rates decreased significantly among ≥65ys (–23.8%) and slightly among <65ys (–1.6%). However, since 2008, unfavorable pattern was also observed in men, with no significant evolution among men ≥65ys and an increase in rates among men <65ys (+10.0%) over the 2008-2013 period. In 2011, we recorded 16 510 deaths for MI with 9 607 men and 6 903 women. From 2000 to 2011, mortality declined substantially, irrespective of sex and age. Proportions of re-admissions, in-hospital case-fatality and post-acute hospitalizations will be also described.

Conclusion Despite a large decline of mortality, unfavorable trends in patients hospitalized for MI have been observed in young women over the period and since 2008 in men. These raise concerns about the increase prevalence of cardiovascular risk factors, especially tobacco, obesity and diabetes, among young people.

The author hereby declares no conflict of interest